

## **FAR/JAR 25.1423 Public Address System**

### **(FINAL REPORT)**

#### **A. FAR 25.1423 (b)**

1. **What is the underlying safety issue addressed by FAR/JAR?**  
Assures system's operational availability within specified time for passenger announcements in the event of an emergency situation.
2. **What are current FAR and JAR standards?**  
FAR 25.1423 (b):  
Be capable of operation within 10 seconds by a flight attendant at those stations in the passenger compartment from which the system is accessible.  
  
JAR 25.1423 (b):  
The system must be capable of operation within 3 seconds from the time a microphone is removed from its stowage by a flight attendant at those stations in the passenger compartment from which its use is accessible.
3. **What are the differences in the standards?**  
The JAR requirement is very specific in that the system must be operational within 3 seconds from the time the flight attendant removes the microphone from its stowage position. The FAR specifies that the system must be operational within 10 seconds. The FAR requirement does not specify the start of the 10-second time period.
4. **What, if any, are the differences in required means of compliance?**  
Demonstration wise there is no difference. However, for a system to be approved under the JAR requirements it must operate within the 3 seconds from the time the microphone is removed from its stowed position. Conversely, the system can be approved under the FAR requirements if it is operational within 10 seconds by a flight attendant at those stations in the passenger compartment from which its use is accessible. Currently, the technology, which is used in the amplifiers for the public address system, is compliant with the 3 seconds delay requirement. The old vacuum tube technology needed heating and by consequence more time to operate. From now on, the 3 seconds delay is acceptable.
5. **What is the proposed action?**  
The JAR requirement is more stringent, therefore, envelop on the JAR.
6. **What should the harmonized standard be?**  
The system must be capable of operation within 3 seconds from the time a microphone is removed from its stowage by a flight attendant at those stations in the passenger compartment from which its use is accessible.
7. **How does this proposed standard address the underlying safety issue (identified in #1)?**

Same as Item #1 above.

8. **Relative to current FAR, does the proposed standard increase, decrease, or maintain the same level of safety?**  
The proposed standard maintains the level of safety. Clarifies the requirement.
9. **Relative to current industry practice, does the proposed standard increase, decrease, or maintains the same level of safety?**  
For the systems that are designed to meet both the FAR/JAR requirements, the safety level remains the same. For the systems that were designed only to meet the FAR requirement, the safety level may be increased.
10. **What other options have been considered and why were they not selected?**  
None.
11. **Who would be affected by the proposed change?**  
Potentially some equipment manufacturers may be affected. For new equipment it is not a problem. Similar requirements exist in the FAR 121.318 and may need to be examined.
12. **To ensure harmonization, what current advisory material (e.g., ACJ, AMJ, AC, policy letters) need to be included in the rule text or preamble?**  
None.
13. **Is existing FAA advisory material adequate?**  
Not applicable
14. **If not, what advisory material should be adopted?**  
Not applicable
15. **How does the proposed standard affect the current ICAO standard?**  
The AVHWG is not aware of any existing ICAO standards.
16. **How does the proposed standard affect other HWG's?**  
No effect.
17. **What is the cost impact of complying with the proposed standard?**  
None.
18. **Does the HWG want to review the draft NPRM at "Phase 4" prior to publication in the Federal Register?**  
No.

19. **In light of the information provided in this report, does the HWG consider that the “fast Track” process is appropriate for this rulemaking project, or is the project too complex or controversial for the “Fast Track” process?**

The project can be worked under the “Fast Track” process.

**FAR/JAR 25.703**  
**(FINAL REPORT)**

**A. FAR 25.703(a)**

**1. What is the underlying safety issue addressed by FAR/JAR?**

This requirement ensures that an aural warning is given, during the initial portion of the takeoff, if the airplane is not in proper configuration to allow a safe takeoff. The intent of this rule is to require that the takeoff configuration warning system cover only those configurations that may be unsafe.

**2. What are current FAR and JAR standards?**

**Current FAR text:**

(a) The system must provide to the pilots an aural warning that is automatically activated during the initial portion of the takeoff roll if the airplane is in a configuration, including any of the following, that would not allow a safe takeoff:

- (1) The wing flaps or leading edge devices are not within the approved range of takeoff positions
- (2) Wing spoilers (except lateral control spoilers meeting the requirements of 25.671) speed brakes, or longitudinal trim devices are in a position that would not allow a safe takeoff.

**Current JAR text:**

(a) The system must provide to the pilots an aural warning that is automatically activated during the initial portion of the takeoff roll if the airplane is in a configuration, including any of the following, that would not allow a safe takeoff:

- (1) The wing flaps or leading edge devices are not within the approved range of takeoff positions
- (2) Wing spoilers (except lateral control spoilers meeting the requirements of 25.671) speed brakes, or longitudinal trim devices are in a position that would not allow a safe takeoff.
- (3) The parking brake is unreleased

**3. What are the differences in the standards?**

The JAR requires one additional input into the warning system: the parking brake. This requirement will increase the margin for safe takeoff, under some runway conditions, if the parking brake remains on. The difference between the FAR and the JAR standards only affect airplanes that do not presently have the parking brake input. Examples of airplanes affected are Raytheon Aircraft models: Beachjet 400/400A, Hawker 800 (800/800XP).

**4. What, if any, are the differences in required means of compliance?**

None

**5. What is the proposed action?**

Envelope the JAR requirement

**6. What should the harmonized standard be?**

The FAR/JAR 25.703(a) should read as follows –

(a) The system must provide to the pilots an aural warning that is automatically activated during the initial portion of the takeoff roll if the airplane is in a configuration, including any of the following, that would not allow a safe takeoff:

- (1) The wing flaps or leading edge devices are not within the approved range of takeoff positions
- (2) Wing spoilers (except lateral control spoilers meeting the requirements of 25.671) speed brakes, or longitudinal trim devices are in a position that would not allow a safe takeoff.
- (3) The parking brake is unreleased

**7. How does this proposed standard address the underlying safety issue (identified in #1)?**

The proposed standard continues to address the underlying issue by requiring additional input into the takeoff warning system. If the parking brake is not released, the aircraft, under certain conditions, may not achieve takeoff speed for the runway length used.

**8. Relative to current FAR, does the proposed standard increase, decrease, or maintain the same level of safety?**

The proposed standard increases the level of safety.

AVHWG SRD Harmonization

9. **Relative to current industry practice, does the proposed standard increase, decrease, or maintains the same level of safety?**  
For FAA and JAA certifications the current industry practice for transport category airplanes is to comply with the proposed standard. Maintains the current safety level.
10. **What other options has been considered and why were they not selected?**  
None in this case, current industry standard has the parking brake input.
11. **Who would be affected by the proposed change?**  
Manufacturers of transport category airplanes and avionics manufacturers would be affected.
12. **To ensure harmonization, what current advisory material (e.g., ACJ, AMJ, AC, policy letters) need to be included in the rule text or preamble?**  
The currently available advisory material does not need to be included in the rule text or the preamble.
13. **Is existing FAA advisory material adequate?**  
The existing AC 25.703-1 Takeoff Configuration Warning Systems should be revised to include the reference to the parking brake requirement.
14. **If not, what advisory material should be adopted?**  
None additional
15. **How does the proposed standard affect the current ICAO standard?**  
The AVHWG is not aware of any ICAO standards in this specific area.
16. **How does the proposed standard affect other HWG's?**  
No effect.

17. **What is the cost impact of complying with the proposed standard?**  
The new airplanes comply with the proposed standard; therefore, there is no cost impact.
18. **Does the HWG want to review the draft NPRM at "Phase 4" prior to publication in the Federal Register?**  
If accepted and published as proposed, NO.
19. **In light of the information provided in this report, does the HWG consider that the "fast Track" process is appropriate for this rulemaking project, or is the project too complex or controversial for the "Fast Track" process?**  
The project falls within the "Fast Track" concept for enveloping.

**B. FAR 25.703(b)**

- 1 **What is the underlying safety issue addressed by FAR/JAR?**  
This requirement ensures that there is continuous aural warning during the initial portion of the takeoff when the airplane is not in the proper configuration to allow a safe takeoff.
- 2 **What are current FAR and JAR standards?**

Current FAR text:

- b) The warning required by paragraph (a) of this section must continue until-
  - (1) The takeoff configuration is changed to allow a safe takeoff;
  - (2) Action is taken by the pilot to terminate the takeoff roll;
  - (3) The airplane is rotated for takeoff; or
  - (4) The warning is manually deactivated by the pilot.

Current JAR text:

- (b) The warning required by paragraph (a) of this section must continue until-
- (1) The takeoff configuration is changed to allow a safe takeoff;
  - (2) Action is taken by the pilot to terminate the takeoff roll;
  - (3) The airplane is rotated for takeoff; or
  - (4) The warning is manually deactivated by the pilot. (See ACJ 25.703 (b)(4).)

**3 What are the differences in the standards?**

The JAR references an ACJ 25.703 which has some additional information that can be interpreted as a requirement.

**4. What, if any, are the differences in required means of compliance?**

None.

**5. What is the proposed action?**

Harmonize on one standard by deleting the reference to ACJ 25.703(b)(4) in the JAR and by adding a new paragraph (c) incorporating the ACJ requirements. Existing paragraph (c) is changed to paragraph (d).

**6. What should the harmonized standard be?**

The FAR/JAR 25.703 (b) --

- (b) The warning required by paragraph (a) of this section must continue until-
- (1) The takeoff configuration is changed to allow a safe takeoff;
  - (2) Action is taken by the pilot to terminate the takeoff roll;
  - (3) The airplane is rotated for takeoff; or
  - (4) The warning is manually silenced by the pilot. The means to silence the warning must not be readily available to the flight crew such that it could be operated instinctively, inadvertently, or by habitual reflexive action. Before each takeoff, the warning must be rearmed automatically, or manually if the absence of automatic rearming is clear and unmistakable..

**7. How does this proposed standard address the underlying safety issue (identified in #1)?**

Same as before. (See item #1).

AVHWG SRD Harmonization

8. **Relative to current FAR, does the proposed standard increase, decrease, or maintain the same level of safety?**  
Increases the level of safety by requiring rearming features.
9. **Relative to current industry practice, does the proposed standard increase, decrease, or maintains the same level of safety?**  
Same.
10. **What other options have been considered and why were they not selected?**  
None in this case. Current industry practice has the rearming feature.
11. **Who would be affected by the proposed change?**  
No one.
12. **To ensure harmonization, what current advisory material (e.g., ACJ, AMJ, AC, policy letters) need to be included in the rule text or preamble?**  
The JAA ACJ 25.703(b)(4) needs to be included in the rule.
13. **Is existing FAA advisory material adequate?**  
AC 25.703-1 should be revised to better define the “not readily available” requirement to the applicant and include flight evaluation for re-arming and silencing. See proposed AC revisions.
14. **If not, what advisory material should be adopted?**  
See #13 above.
15. **How does the proposed standard affect the current ICAO standard?**  
. The AVHWG is not aware of any ICAO standards in this specific area
16. **How does the proposed standard affect other HWG’s?**  
No effect.
17. **What is the cost impact of complying with the proposed standard?**  
None.
18. **Does the HWG want to review the draft NPRM at “Phase 4” prior to publication in the Federal Register?**  
If accepted and published as proposed, NO.

19. In light of the information provided in this report, does the HWG consider that the “fast Track” process is appropriate for this rulemaking project, or is the project too complex or controversial for the “Fast Track” process? The project falls within the “Fast Track” concept for enveloping.

**C. FAR 25.703 (c)**

**1. What is the underlying safety issue addressed by FAR/JAR?**

This requirement ensures that there is a warning for all takeoff configurations for which the airplane is certified.

**2. What are current FAR and JAR standards?**

Current FAR text:

(c) The means used to activate the system must function properly throughout the ranges of takeoff weights, altitudes, and temperatures for which certification is requested

Current JAR text:

(c) The means used to activate the system must function properly for all authorised takeoff power settings and procedures, and throughout the ranges of takeoff weights, altitudes, and temperatures for which certification is requested.

**3. What are the differences in the standards?**

The JAR includes in the requirement that the warning system must function at all power settings and takeoff procedures for which the certification is requested.

The FAR is silent in those areas.

**4. What, if any, are the differences in required means of compliance?**

None. The applicant must show to the FAA that the system is operational at all power settings and procedures.

**5. What is the proposed action?**

Envelope on JAR

**6. What should the harmonized standard be?**

**AVHWG SRD Harmonization**

The FAR/JAR 25.703(c) should read as follows

(c) The means used to activate the system must function properly for all authorized takeoff power settings and procedures, and throughout the ranges of takeoff weights, altitudes, and temperatures for which certification is requested.

**7. How does this proposed standard address the underlying safety issue (identified in #1)?**

There is no change, since the requirements did not change, only clarification

**8. Relative to current FAR, does the proposed standard increase, decrease, or maintain the same level of safety?**

Maintains the same.

**9. Relative to current industry practice, does the proposed standard increase, decrease, or maintains the same level of safety?**

Maintains the same.

**10. What other options have been considered and why were they not selected?**

None.

**11. Who would be affected by the proposed change?**

No one.

**12. To ensure harmonization, what current advisory material (e.g., ACJ, AMJ, AC, policy letters) need to be included in the rule text or preamble?**

The currently available advisory material does not need to be included in the rule text or the preamble.

**13. Is existing FAA advisory material adequate?**

The existing FAA advisory material is adequate.

**14. If not, what advisory material should be adopted?**

None for this paragraph.

**15. How does the proposed standard affect the current ICAO standard?**

The AVHWG is not aware of any ICAO standards in this specific area

**16. How does the proposed standard affect other HWG's?**

AVHWG SRD Harmonization

No other HWG's affected

**17. What is the cost impact of complying with the proposed standard?**

No change from present

**18. Does the HWG want to review the draft NPRM at "Phase 4" prior to publication in the Federal Register?**

If accepted and published as proposed, NO.

**19. In light of the information provided in this report, does the HWG consider that the "fast Track" process is appropriate for this rulemaking project, or is the project too complex or controversial for the "Fast Track" process?**

The project falls within the "Fast Track" concept for enveloping.

**FAR/JAR 25.1333 (b)**  
(Final Report)

**A. FAR 25.1333(b)**

**1. What is the underlying safety issue addressed by FAR/JAR?**

The requirement ensures that there is sufficient information to the flight crew for safe control of the airplane in the event of a failure condition. It also ensures that the crew work load will not be increased by requiring that essential information to be present without additional crew action.

**2. What are current FAR and JAR standards?**

Current FAR 25.1333(b):

- (b) The equipment, systems, and installations must be designed so that one display of the information essential to the safety of flight which is provided by the instruments, including attitude, direction, airspeed, and altitude will remain available to the pilots, without additional crew member action, after any single failure or combination of failures that is not shown to be extremely improbable; and

Current JAR 25.1333(b):

- (b) The equipment, systems, and installations must be designed so that sufficient information is available to assure control of the aeroplane in speed, altitude, heading and attitude by one of the pilots without immediate crew action, after any single failure or combination of failures that is not assessed to be extremely improbable (see ACJ 25.1333(b)); and

**3. What are the differences in the standards?**

- a. The FAR requires one display of the essential information required for safe flight (attitude, direction airspeed, and altitude) while the JAR asks for sufficient information to assure control of attitude, direction, airspeed, and altitude.
- b. The JAR language replaces the word “additional” in phrase “without additional crew action” with the word “immediate” implying that some later crew member action is possible.
- c. The FAR uses “direction” while the JAR uses “heading”.

**4. What, if any, are the differences in required means of compliance?**

- a. The JAA may require to demonstrate what is the sufficient information required to assure control of the airplane in attitude, direction, airspeed, and altitude.
- b. The FAA requires an analysis to show compliance, while the JAA may accept a combination of analysis and/or demonstration.

**FAR/JAR 25.1333 (b)**  
(Final Report)

**A. FAR 25.1333(b)**

**1. What is the underlying safety issue addressed by FAR/JAR?**

The requirement ensures that there is sufficient information to the flight crew for safe control of the airplane in the event of a failure condition. It also ensures that the crew work load will not be increased by requiring that essential information to be present without additional crew action.

**2. What are current FAR and JAR standards?**

Current FAR 25.1333(b):

- (b) The equipment, systems, and installations must be designed so that one display of the information essential to the safety of flight which is provided by the instruments, including attitude, direction, airspeed, and altitude will remain available to the pilots, without additional crew member action, after any single failure or combination of failures that is not shown to be extremely improbable; and

Current JAR 25.1333(b):

- (b) The equipment, systems, and installations must be designed so that sufficient information is available to assure control of the aeroplane in speed, altitude, heading and attitude by one of the pilots without immediate crew action, after any single failure or combination of failures that is not assessed to be extremely improbable (see ACJ 25.1333(b)); and

**3. What are the differences in the standards?**

- a. The FAR requires one display of the essential information required for safe flight (attitude, direction airspeed, and altitude) while the JAR asks for sufficient information to assure control of attitude, direction, airspeed, and altitude.
- b. The JAR language replaces the word “additional” in phrase “without additional crew action” with the word “immediate” implying that some later crew member action is possible.
- c. The FAR uses “direction” while the JAR uses “heading”.

**4. What, if any, are the differences in required means of compliance?**

- a. The JAA may require to demonstrate what is the sufficient information required to assure control of the airplane in attitude, direction, airspeed, and altitude.
- b. The FAA requires an analysis to show compliance, while the JAA may accept a combination of analysis and/or demonstration.

## AVHWG SRD Harmonization

5. **What is the proposed action?**  
Envelope on the FAR/JAR; use the JAR words modified to include the FAR statement "without additional crew action". Also change "speed" to "airspeed".
6. **What should the harmonized standard be?**  
(b) The equipment, systems, and installations must be designed so that sufficient information is available to assure control of the airplane airspeed, altitude, heading, and attitude by one of the pilots without additional crew member action, after any single failure or combination of failures that is not assessed to be extremely improbable;  
and
7. **How does this proposed standard address the underlying safety issue (identified in #1)?**  
Same as stated on #1 above.
8. **Relative to current FAR, does the proposed standard increase, decrease, or maintain the same level of safety?**  
Maintains the same level of safety.
9. **Relative to current industry practice, does the proposed standard increase, decrease, or maintains the same level of safety?**  
Maintains the same level of safety.
10. **What other options have been considered and why were they not selected?**  
The FAR words were considered. However, the proposed wording permits better flexibility in light of the new technologies while maintaining the same safety level.
11. **Who would be affected by the proposed change?**  
Non FAA certificated systems.
12. **To ensure harmonization, what current advisory material (e.g., ACJ, AMJ, AC, policy letters) need to be included in the rule text or preamble?**  
The AC/AMJ 25-11 and ACJ 25.1333 needs to be reviewed. A harmonized AC/ACJ needs to be developed.
13. **Is existing FAA advisory material adequate?**  
See #12 above.
14. **If not, what advisory material should be adopted?**  
See #12 above.
15. **How does the proposed standard affect the current ICAO standard?**  
The AVHWG is not aware of any..

**AVHWG SRD Harmonization**

- 16. How does the proposed standard affect other HWG's?**  
None affected.
- 17. What is the cost impact of complying with the proposed standard?**  
None if the system complies with the FAA requirements.
- 18. Does the HWG want to review the draft NPRM at "Phase 4" prior to publication in the Federal Register?**  
Yes.
- 19. In light of the information provided in this report, does the HWG consider that the "fast Track" process is appropriate for this rulemaking project, or is the project too complex or controversial for the "Fast Track" process?**  
This project is appropriate for the "Fast Track" process.

TAE  
Avionics group  
H.W.G.

**FAR/JAR 25.1333 (b)**  
**Avionics Harmonization Working Group**  
**Final Report / Issue 2**

(as agreed in AVHWG Meeting #4 in Toulouse on January 13, 2000)

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**1. What is the underlying safety issue addressed by FAR/JAR?**

The requirement ensures that there is sufficient information to the flight crew for safe control of the airplane in the event of a failure condition. It also ensures that the crew work load will not be increased by requiring that essential information to be present without additional crew action.

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**2. What are current FAR and JAR standards?**

**Current FAR 25.1333(b):**

- (b) The equipment, systems, and installations must be designed so that one display of the information essential to the safety of flight which is provided by the instruments, including attitude, direction, airspeed, and altitude will remain available to the pilots, without additional crew member action, after any single failure or combination of failures that is not shown to be extremely improbable; and ...

**Current JAR 25.1333(b):**

- (b) The equipment, systems, and installations must be designed so that sufficient information is available to assure control of the aeroplane in speed, altitude, heading and attitude by one of the pilots without immediate crew action, after any single failure or combination of failures that is not assessed to be extremely improbable (see ACJ 25.1333(b)); and. . .

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**3. What are the differences in the standards?**

The FAR requires one display of the essential information required for safe flight (attitude, direction airspeed, and altitude), while the JAR asks for sufficient information to assure control of attitude, direction, airspeed, and altitude.

The JAR language replaces the word "*additional*" in the phrase "without additional crew action" with the word "*immediate*," implying that some later crew member action is possible.

The FAR uses the term "*direction*," while the JAR uses "*heading*."

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**4. What, if any, are the differences in required means of compliance?**

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- a. The JAA may require demonstration of the *sufficient information* necessary to assure control of the airplane in attitude, direction, airspeed, and altitude.
- b. The FAA requires an analysis to show compliance, while the JAA may accept a combination of analysis and/or demonstration.

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**5. What is the proposed action?**

Envelope on the FAR/JAR; use the JAR words modified to include the FAR statement “without additional crew action”.

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**6. What should the harmonized standard be?**

“(b) The equipment, systems, and installations must be designed so that sufficient information is available to assure control of the airplane in airspeed, altitude, direction, and attitude by one of the pilots without additional crew member action, after any single failure or combination of failures that is not assessed to be extremely improbable; and . . .”

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**7. How does this proposed standard address the underlying safety issue (identified in #1)?**

Same as stated on #1, above.

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**8. Relative to current FAR, does the proposed standard increase, decrease, or maintain the same level of safety?**

Maintains the same level of safety.

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**9. Relative to current industry practice, does the proposed standard increase, decrease, or maintains the same level of safety?**

Maintains the same level of safety.

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**10. What other options have been considered and why were they not selected?**

The FAR words were considered. However, the proposed wording permits better flexibility in light of the new technologies while maintaining the same safety level.

The group considered both terms “direction” and “heading” for the harmonized FAR/JAR, taking into consideration both the conventional display methods and possible future display methods developed to control the aircraft.

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As a starting point we reviewed the definition of direction – “The course by which something moves, lies, or points.” This implies that heading is ONE FORM of direction, but not necessarily the only form. Graphical representation of aircraft direction is becoming more widespread, and may provide better situational awareness than today’s conventional representation using heading as a primary or only direction source. Other information sources (position, database information, and inertial velocities) may provide more accurate and more integrated representations of aircraft direction, possibly resulting in more accurate control.

In addition, the word “direction indicator” is used in other FAR/JAR material, most notably 25.1303 which identifies required instruments. The existing FAR 25.1333(b) includes the word “direction.” Admittedly, many parenthetical and other comments within the FAR/JAR, as well as historical applications, imply a gyroscopically stabilized (or heading) indicator, but the sole use of “heading” becomes more restrictive, possibly preventing the implementation of novel and improved design features intended for safer operation of the aircraft. Therefore, the group’s position is to maintain the existing FAR wording of “direction.”

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**11. Who would be affected by the proposed change?**

Airplane and airplane systems manufacturers. Non-FAA-certificated systems.

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**12. To ensure harmonization, what current advisory material (e.g., ACJ, AMJ, AC, policy letters) need to be included in the rule text or preamble?**

The AC/AMJ 25-11 and ACJ 25.1333 needs to be reviewed. A harmonized AC/ACJ needs to be developed. **[PER 1/00 TAE MEETING: Working Group is developing AC material – expected Spring 2000.]**

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**13. Is existing FAA advisory material adequate?**

See #12 above.

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**14. If not, what advisory material should be adopted?**

See #12 above.

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**15. How does the proposed standard affect the current ICAO standard?**

The AVHWG is not aware of any..

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**16. How does the proposed standard affect other HWG’s?**

None affected.

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**17. What is the cost impact of complying with the proposed standard?**

None, if the system complies with the FAA requirements.

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**18. Does the HWG want to review the draft NPRM at "Phase 4" prior to publication in the Federal Register?**

Yes.

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**19. In light of the information provided in this report, does the HWG consider that the "fast Track" process is appropriate for this rulemaking project, or is the project too complex or controversial for the "Fast Track" process?**

This project is appropriate for the "Fast Track" process.

